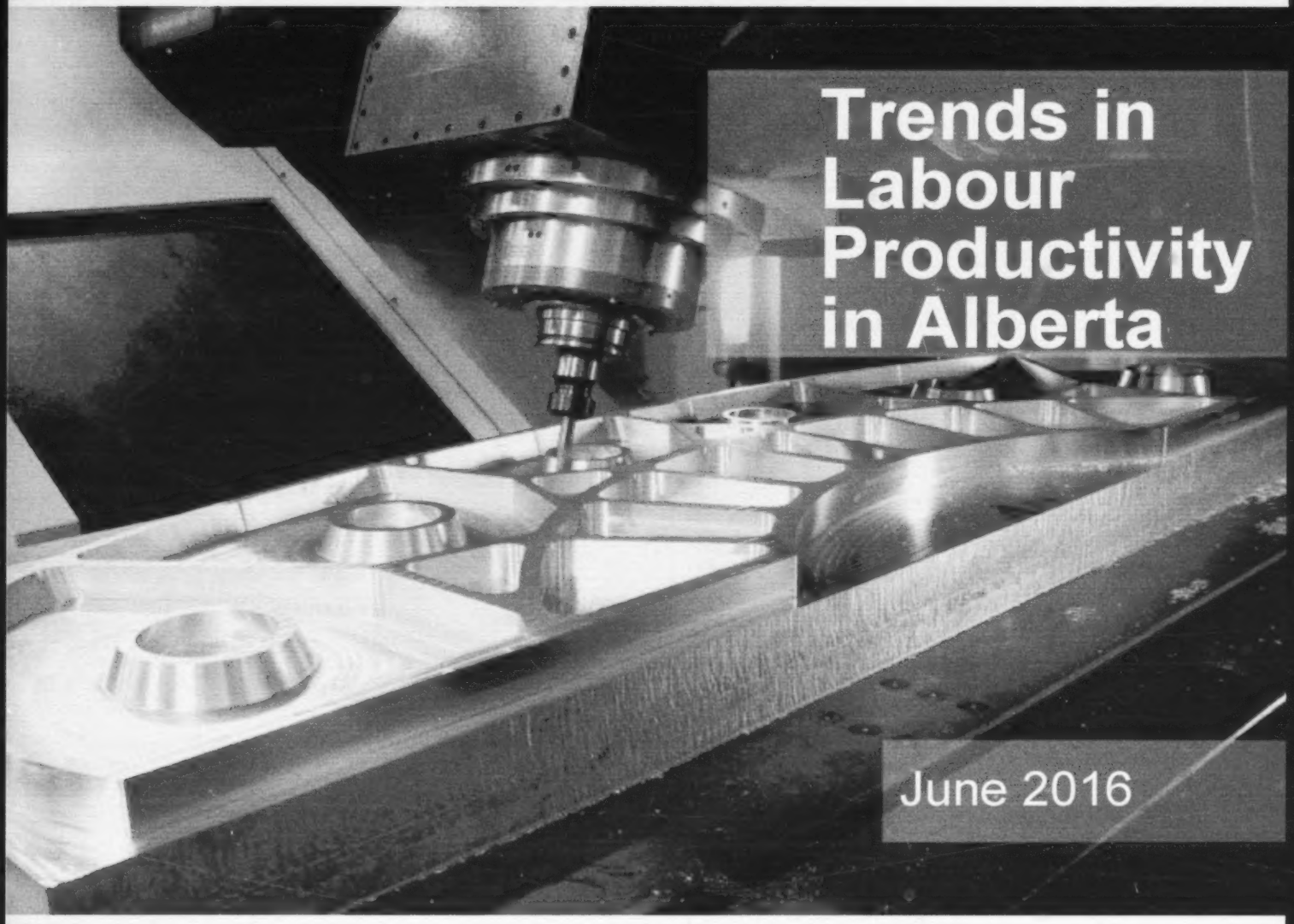


Trends in Labour Productivity in Alberta

June 2016

Alberta

Canada

Introduction

Labour productivity is the single most important determinant in maintaining and enhancing sustained prosperity for Albertans. Higher productivity growth will alleviate some of Alberta's future labour supply issues arising from an aging work force and decreasing labour force growth, and will also increase Alberta's international competitiveness and thereby secure long-term economic growth. The key drivers of labour productivity include skills and human capital, capital investment, and innovation.

Labour productivity is measured by GDP (Gross Domestic Product) per hour worked. In this report, Alberta's performance in labour productivity will be analyzed relative to other provinces and by industry. Labour productivity is affected by both the quality of human capital (education, training, skills and experience), and by the amount and sophistication of the equipment, tools and machinery being used. Investment in people and equipment is therefore foundational to productivity growth. However, the innovative manner in which people apply their knowledge and skills is also crucial to productivity growth. Promoting a culture of innovation is a key element of the productivity equation.

In December 2015, Statistics Canada released provincial productivity estimates for the years 2007 to 2014. This report provides an update of the Trends in Labour Productivity report that was released in September 2014.

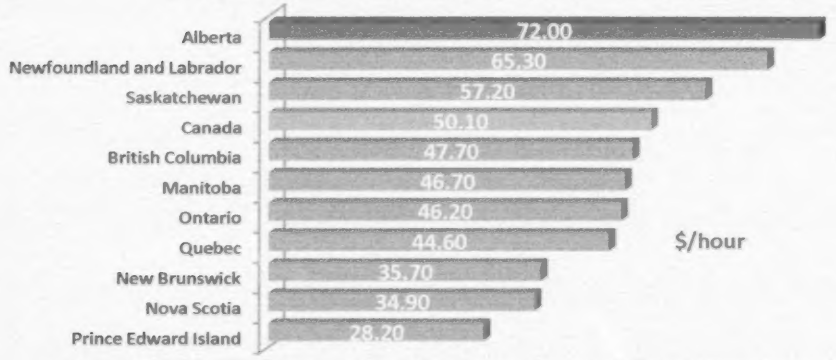
Recent Productivity Trends

According to Statistics Canada, Alberta has the highest labour productivity in the country. In 2014, labour productivity in Alberta's business sector was $72.00 per hour (Chart 1), 44% higher than the Canadian average of $50.10 per hour. Newfoundland and Labrador had the second highest productivity level at $65.30 per hour, followed by Saskatchewan at $57.20. The high productivity levels in these three provinces are mainly the result of their large and highly productive oil and gas extraction sectors.

Chart 1

Business Sector Productivity of Labour - 2014

(Real GDP per Hour Worked, in 2007 constant dollars)



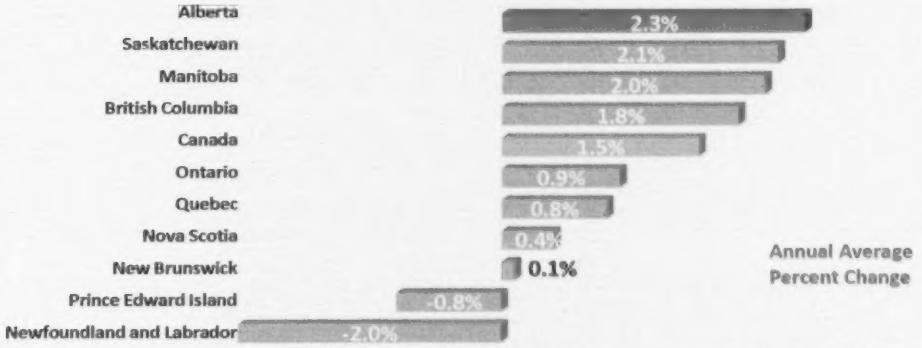
Source: Statistics Canada -- Table 383-0029, Labour productivity and related variables by business sector industry

Between 2009 and 2014, GDP in Alberta's business sector increased by 27.8% or 5.0% per year, the highest 5-year growth since the 5-year period ending in 1997. Over the same period, the total number of hours worked increased by 16.8% or 3.1% per year. As a result, labour productivity rose 11.8% over the 5-year time period or 2.3% per year. In other words, just under one-half of the increase in GDP came as a result of increased labour productivity and just over one-half was the result of increased labour input.

Alberta's 2.3% average annual growth rate in labour productivity was the highest provincial growth rate over the past five years (Chart 2) and was much higher than the Canadian growth rate of 1.5% per year. In 2014, Alberta's productivity grew by 2.6% from 2013, the second highest growth rate that year, surpassed only by British Columbia's 3.0% increase.

Chart 2

Business Sector Labour Productivity Growth Rates 2009 - 2014 (Based on Hours Worked)



Source: Statistics Canada -- Table 383-0029, Labour productivity and related variables by business sector industry

The average annual productivity increase of 2.3% for the years 2009 to 2014 is a vast improvement over the average rate of 1.5% recorded for the 5-year period of 2008 to 2013. The improvement in the productivity growth rate is mainly the result of an improvement in Alberta's oil and gas sector productivity that took place during 2013 and 2014. Prior to 2013, productivity in that sector steadily declined as Alberta's conventional oil and gas reserves were slowly depleting and new oil sands projects had staff on-site years before they started to produce bitumen or synthetic crude oil. Starting in 2013, oil and gas productivity increased as oil sands projects went into production and as conventional crude oil production staged a recovery, and it grew robustly in both 2013 and 2014.

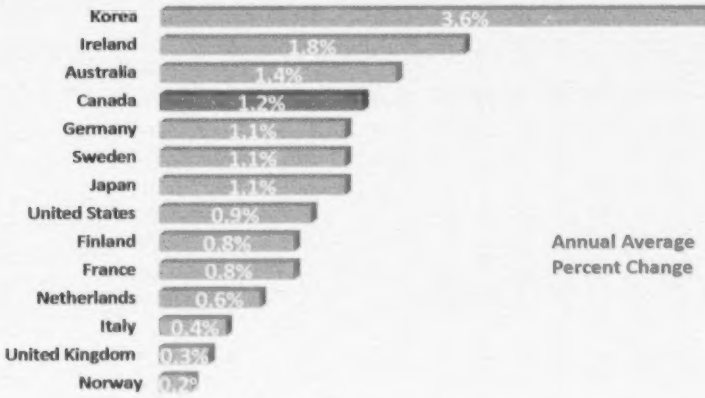
Alberta's productivity growth rate is now much higher than the United States' 0.9% growth rate over the same period and also higher than that of most other international competitors (Chart 3[1]).

[1] Productivity growth rates in the international comparison (Chart 3) are based on the total economy rather than the business sector and therefore Canada's growth rate in Chart 3 is not directly comparable to the one in Chart 2

Chart 3

International Labour Productivity Growth Rates

2009 - 2014 (Based on Hours Worked)



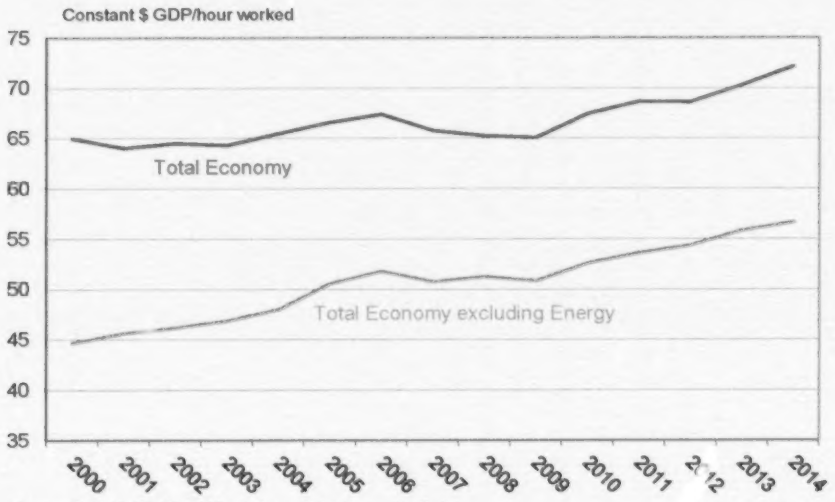
Source: The Conference Board

Most of Alberta's productivity gains occurred after 2009 (see also Chart 4[2]). Productivity growth was elusive in 2008 and 2009 as a result of the global recession, and it was also weak between 2000 and 2007 because of sharply declining productivity levels in the oil and gas sector.

Chart 4

Productivity Levels in Alberta

Total Economy and Total Economy excluding Energy



Sources: Statistics Canada and Alberta Economic Development & Trade

[2] In Chart 4 productivity levels for the entire economy are examined rather than for the business sector, as a longer time series is available for the total economy than for the business sector. This results in slightly higher estimates.

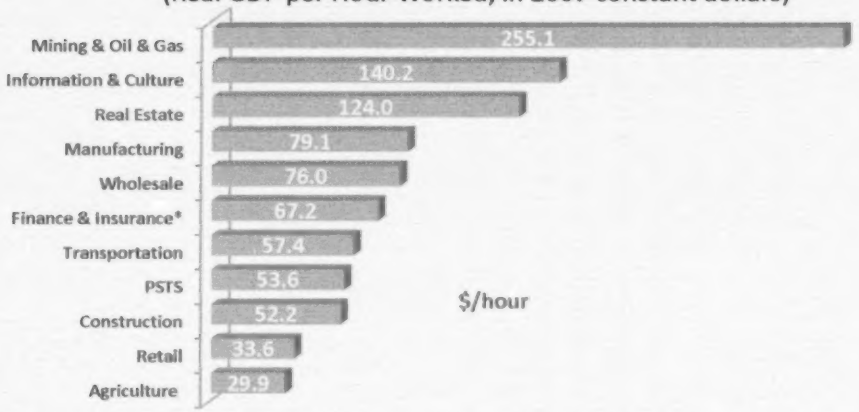
The Oil and Gas Sector is Boosting Alberta's Overall Productivity

Alberta's high productivity level is in large part the result of its large and capital-intensive oil and gas extraction sector. In 2014, the labour productivity level was $255 per hour in the mining and oil and gas sector (Chart 5), because of very high levels in the oil and gas extraction sub-sector ($441 per hour). Levels in this capital-intensive industry are high as output (or GDP) per worker and per hour worked is very high in that industry. When excluding the mining and oil and gas sector Alberta's business sector labour productivity level drops to $53.20 per hour, 17% higher than the Canadian average of $45.40. The $53.20 for the business sector excluding energy is much lower than the overall business sector productivity level of $72.00 in Alberta which in turn was 44% higher than the Canadian average. In other words, more than one-half of the 44% difference between Alberta and Canada's business sector productivity levels is the result of Alberta's highly productive oil and gas sector.

Chart 5

Labour Productivity in Alberta Industries in 2014

(Real GDP per Hour Worked, in 2007 constant dollars)



Source: Statistics Canada -- Table 383-0029, Labour productivity and related variables by business sector industry
* Includes Holding Companies
PSTS: Professional, Scientific and Technical Services

Although the mining and oil and gas sector has the highest productivity level, its productivity declined sharply between 2000 and 2012: productivity in the oil and gas extraction sub-sector declined by more than two-thirds during that period. There are a number of reasons for this decline. First, Alberta's conventional oil and gas resources were in decline and it took more effort to find and extract each additional barrel or gigajoule. Second, new oil sands projects will have employees on-site before production actually starts, raising hours worked without any increase in GDP. Third, high oil prices made high cost, labour and capital intensive oil reservoirs more attractive.

In more recent years, productivity has improved in the mining and oil and gas sector: in 2013 and 2014 this sector's productivity advanced by 4.2% and 3.6%, respectively. The main reasons for this turn-around are that a number of large oil sands projects started producing and that conventional oil

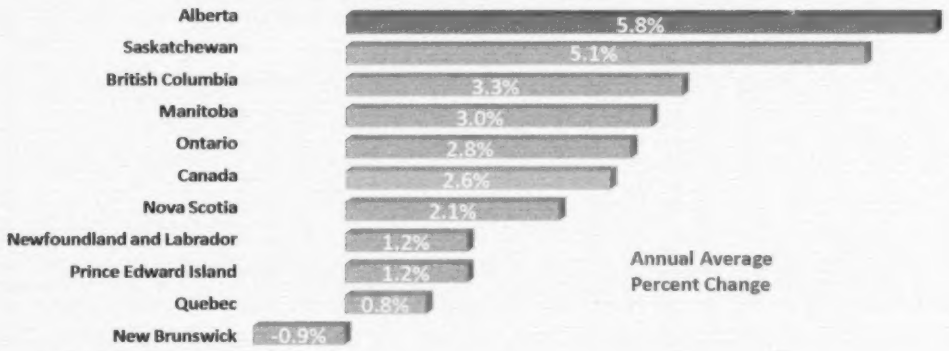
production has staged a recovery during the past few years. It is likely that this sector's productivity will continue to improve as more oil sands projects enter the production phase and as oil and gas producers and service companies find new ways to cut costs and improve productivity to deal with a much lower oil and gas price environment. On a five-year basis, productivity in mining and oil and gas increased at an annual average rate of only 0.5% between 2009 and 2014 as the recent strong growth was mostly offset by weakness between 2009 and 2012.

Productivity in the Manufacturing Sector is Surging

Alberta's manufacturing sector also had the highest productivity of all provinces and exceeded the Canadian productivity level by 36%. Even for this sector the high productivity level was mostly the result of very high levels in its downstream oil and gas sub-sectors: refined petroleum products and chemicals. The manufacturing sector also had the strongest productivity growth of 5.8% per year between 2009 and 2014, a rate that was much higher than Canada's 2.6% growth rate (Chart 6) and double the 2.9% annual increase that was registered in Alberta for the five-year period ending in 2013.

Chart 6

Provincial Labour Productivity Growth Rates - Manufacturing
2009 - 2014 (Based on Hours Worked)

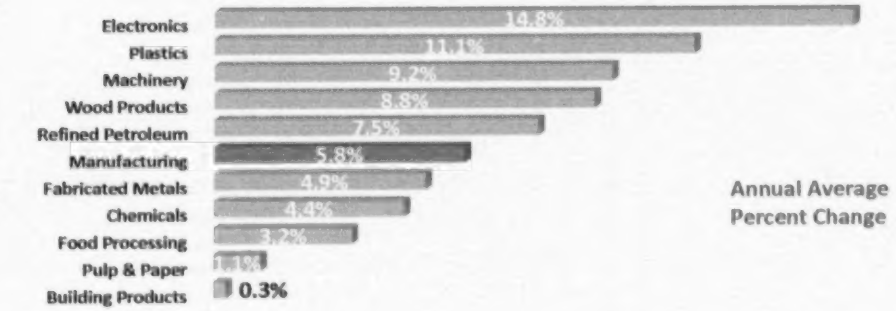


Source: Statistics Canada

The manufacturing sector's strong recent performance was mainly the result of high productivity growth in a number of large sub-sectors, such as machinery and refined petroleum products, and surging growth in a number of smaller sub-sectors, such as electronics, plastics and wood products (Chart 7). The machinery sector's productivity increased by 9.2% per year, as demand surged for oil and gas field machinery while employment in that sub-sector rose at a much more modest pace. In the refineries (refined petroleum products) sector, productivity grew by 7.5% per year, as production increased at a modest pace while the number of jobs declined between 2009 and 2014. Very high growth was registered in globally competitive sectors such as electronics (14.8% per year), plastics (11.1% per year) and wood products (8.8%). For instance, in the electronics sector output grew strongly while employment declined, a trend similar to what has been happening in the US electronics sector for many years.

Chart 7

Labour Productivity Growth Rates in Alberta's Manufacturing Sectors, 2009 - 2014 (Based on Hours)



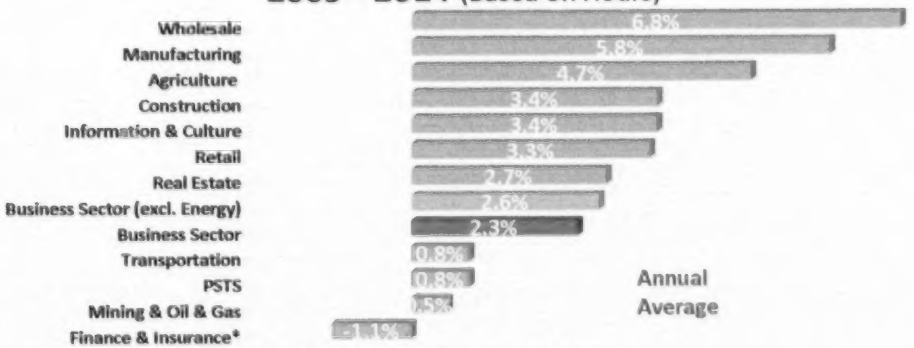
Source: Statistics Canada

Other Sectors' Productivity Performance

Most other sectors had strong productivity growth (Chart 8). The wholesale sector had the highest productivity growth at 6.8% per year, mainly as a result of surging output in oil and gas related wholesale sub-sectors such as machinery and equipment wholesalers. Farm consolidation and capital investment led to a 4.8% per year increase in the agricultural sector. Information and culture (mainly telecommunication services) benefited from heavy investment in telecom equipment by telecom providers, such as cell phone companies, and had productivity growth of 3.4% per year. Productivity in the construction sector also grew by 3.4% per year because of very high productivity growth in the residential, non-residential and repair construction sub-sectors. Productivity in the finance and insurance sector declined by 1.1% per year, mainly the result of a large decline in the insurance carriers sub-sector.

Chart 8

Labour Productivity Growth Rates in Alberta's Industries 2009 - 2014 (Based on Hours)

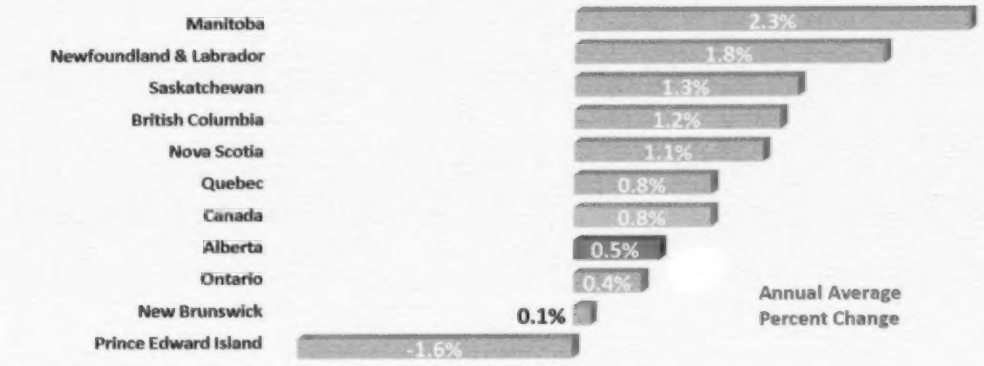


Sources: Statistics Canada and Alberta Economic Development & Trade
PSTS = Professional, Scientific and Technical Services
* Includes Holding Companies

Productivity in the business services sector[3] (excluding retail and wholesale trade and real estate) has grown at an average annual rate of 0.5% per year (Chart 9), below the Canadian average growth of 0.8% per year. The following business service industries had the highest growth: information and culture (3.4% per year); arts, entertainment and recreation (1.7%); and professional, scientific and technical services (0.8%).

Chart 9

Provincial Labour Productivity Growth Rates - Business Services 2009 - 2014 (Based on Hours Worked)



Source: Statistics Canada

Summary

In 2014, Alberta's productivity level of $72 GDP per hour worked was the highest in the country and 44% higher than the Canadian average. Alberta's high productivity level is in large part the result of its large and capital-intensive oil and gas extraction sector. If we exclude the energy sector, Alberta's productivity is a much lower $53.20, only 17% ahead of the Canadian average for the non-energy business sector.

Alberta's business sector productivity growth has been weak historically, mainly because the oil and gas sector had sharply declining productivity between 2000 and 2012. However, productivity growth has improved in recent years because of a pronounced turn-around in the oil and gas sector as new oil sands projects came into production and conventional oil production started growing again. Alberta's 2.3% average annual productivity growth between 2009 and 2014 is the highest in Canada and even exceeds the growth rates achieved in many international jurisdictions such as the US.

[3] Business Services include the following industries: Transportation & Warehousing; Information & Culture; Finance & Insurance; Professional, Scientific & Technical Services; Administrative & Support, Waste Management; Arts, Entertainment & Recreation; Accommodation & Food Services. Excluded: Retail; Wholesale; Real Estate